THE CLAIMS:

Please AMEND the claims and ADD new claims as indicated below:

1. (Currently Amended) A wavelength division multiplexing optical communication system for transmitting wavelength division multiplexed signal light containing a plurality of optical signals of different wavelengths, from a transmitting terminal station to a receiving terminal station via an optical transmission path, wherein

said receiving terminal station comprises reception characteristics measurement means for measuring reception information including optical signal to noise ratio and a transmission error rate for the optical signals of respective wavelengths transmitted through said optical transmission path, and reception information transmission means for transmitting the reception information about each wavelength measured by said reception characteristics measurement means to said transmitting terminal station, and

said transmitting terminal station comprises pre-emphasis performing means for performing pre-emphasis on the wavelength division multiplexed signal light transmitted along said optical transmission path, chirp applying means for applying an optical wavelength chirp to the wavelength division multiplexed signal light transmitted along said optical transmission path, and control means for controlling said pre-emphasis performing means and said chirp applying means, depending on the reception information about each wavelength transmitted from said receiving terminal station, wherein a setting of said pre-emphasis in said pre-emphasis performing means is made by said control means after said control means ~~controlling~~ controls a setting of an α parameter representing an amount of the optical wavelength chirp in said chirp applying means, in a repeating sequence, so that said control means thereby controls said pre-emphasis performing means and said chirp applying means together to optimize transmission error rate or signal to noise ratio of the wavelength division multiplexed signal light at the receiving terminal station.

2. (Original) A wavelength division multiplexing optical communication system according to claim 1, wherein

said optical transmission path has a first line for transmitting wavelength division multiplexed signal light from said transmitting terminal station to said receiving terminal station, and a second line opposite to said first line, and

said reception information transmission means superimposes the reception information about each wavelength measured by said reception characteristics measuring means, onto overhead information of the optical signals corresponding to respective wavelength which is transmitted along said second line, and transmits this to said transmitting terminal station end.

3. (Original) A wavelength division multiplexing optical communication system according to claim 1, wherein

said transmitting terminal station comprises: optical transmitting device for generating said optical signals of respective wavelength and outputting these, optical multiplexing device for multiplexing the optical signals of respective wavelengths output from said optical transmitting device and outputting to said optical transmission path, and reception information transfer means for transferring the reception information about each wavelength transmitted from said receiving terminal station between said optical signal transmitting device and said optical multiplexing device, and said pre-emphasis performing means and said chirp applying means are respectively provided in at least one of said optical signal transmitting device and said optical multiplexing device.

4. (Original) A wavelength division multiplexing optical communication system according to claim 3, wherein there is provided an optical amplifier disposed on said optical transmission path, and

said transmitting terminal station has reception information transmitting means for transmitting the reception information about each wavelength transmitted from said receiving terminal station to said optical amplifier, and

said optical amplifier has supervisory control means for controlling operating conditions in accordance with the reception information about each wavelength transmitted from said transmitting terminal station.

5. (Original) A wavelength division multiplexing optical communication system according to claim 3, wherein there is provided an optical add and drop multiplexer disposed on said optical transmission path, and

said transmitting terminal station has reception information transmitting means for

transmitting the reception information about each wavelength transmitted from said receiving terminal station to said optical add and drop multiplexer, and

said optical add and drop multiplexer has supervisory control means for controlling operating conditions in accordance with the reception information about each wavelength transmitted from said transmitting terminal station.

6. (Original) A wavelength division multiplexing optical communication system according to claim 1, wherein

said transmitting terminal station has wavelength dispersion compensating means for compensating for wavelength dispersion characteristics of said optical transmission path, and said control means also controls a wavelength dispersion compensation amount in said wavelength dispersion compensation means corresponding to the reception information about each wavelength transmitted from said receiving terminal station.

7. (Original) A wavelength division multiplexing optical communication system according to claim 1, wherein

said receiving terminal station comprises: wavelength dispersion compensating means for compensating for wavelength dispersion characteristics of said optical transmission path, polarization-mode dispersion compensating means for compensating for polarization-mode dispersion generated in said optical transmission path, data discriminating means for performing data discrimination processing of received wavelength division multiplexed signal light, and control means for respectively controlling a wavelength dispersion compensation amount in said wavelength dispersion compensation means, a polarization-mode dispersion compensating amount in said polarization-mode dispersion compensating means and the setting of a discrimination decision point in said data discriminating means, depending on the reception information about each wavelength transmitted from said receiving terminal station.

8. (Original) A wavelength division multiplexing optical communication system according to claim 1, wherein said reception characteristics measurement means measures an electrical signal to noise ratio pertaining to the optical signals of respective wavelengths transmitted along said optical transmission path, and converts the measured electrical signal to noise ratio to an optical signal to noise ratio according to a previously set relationship between

the electrical signal to noise ratio and the optical signal to noise ratio, to thereby obtain reception information about each wavelength.

9. (Previously Presented) A wavelength division multiplexing optical communication system according to claim 1, wherein said reception characteristics measurement means measures an electrical signal to noise ratio pertaining to the optical signals of respective wavelengths transmitted along said optical transmission path, and converts the measured electrical signal to noise ratio to a transmission error rate according to a previously set relationship between the electrical signal to noise ratio and the transmission error rate, to thereby obtain reception information about each wavelength.

10. (Currently Amended) A wavelength division multiplexing optical communication method for transmitting a wavelength division multiplexed optical signal, containing a plurality of optical signals of different wavelengths, from a transmitting terminal station to a receiving terminal station via an optical transmission path, wherein

in said receiving terminal station, reception information including an optical signal to noise ratio and a transmission error rate for the optical signals of respective wavelengths transmitted through said optical transmission path is measured, and the measured reception information about each wavelength is transmitted to said transmitting terminal station, and

in said transmitting terminal station, depending on the reception information about each wavelength transmitted from said receiving terminal station, the setting of pre-emphasis to be performed on the wavelength division multiplexed signal light transmitted along said optical transmission path and the setting a parameter α representing an amount of the optical wavelength chirp applied to the wavelength division multiplexed signal light transmitted along said optical transmission path are respectively controlled, wherein the setting of said pre-emphasis is made after controlling the setting of the α parameter representing an amount of the optical wavelength chirp, in a repeating sequence, so that the performed pre-emphasis and applied optical wavelength chirp are controlled together to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed optical signal at the receiving terminal station.

11. (Previously Presented) A wavelength division multiplexing communication system for transmitting wavelength division multiplexed signal light containing a plurality of optical signals of different wavelengths, from a transmitting terminal station to a receiving terminal station via an optical transmission path and an optical repeater station, wherein

said receiving terminal station comprises reception characteristics measurement means for measuring reception information including an optical signal to noise ratio and a transmission error rate for the optical signals of respective wavelengths transmitted through said optical transmission path, and reception information transmission means for transmitting the reception information about each wavelength measured by said reception characteristics measurement means to said transmitting terminal station,

said transmitting terminal station comprises pre-emphasis performing means for performing pre-emphasis on the wavelength division multiplexed signal light transmitted along said optical transmission path, control means for controlling, depending on the reception information about each wavelength transmitted from said receiving terminal station, the setting of pre-emphasis in said pre-emphasis performing means, and reception information transfer means for transferring the reception information about each wavelength transmitted from said receiving terminal station to said optical repeater station,

said optical repeater station comprises optical amplification means containing a Raman amplifier for Raman amplifying the wavelength division multiplexed signal light transmitted from said optical transmission path, and Raman amplification control means for controlling a supply condition of Raman excitation light in said Raman amplifier corresponding to the reception information about each wavelength transmitted from said transmitting terminal station, and

said control means of said transmitting terminal station and said Raman amplification control means of said optical repeater station control the setting of pre-emphasis in said pre-emphasis performing means after controlling the supply condition of Raman excitation light in said Raman amplifier.

12. (Original) A wavelength division multiplexing optical communication system according to claim 11, wherein

said optical amplification means of said optical repeater station has an optical fiber amplifier for amplifying to a constant level using a rare earth element doped fiber, the wavelength division multiplexed signal light output from said Raman amplifier.

13. (Original) A wavelength division multiplexing optical communication system according to claim 11, wherein

said optical transmission path has a first line for transmitting the wavelength division multiplexed signal light from said transmitting terminal station to said receiving terminal station, and a second line opposite to said first line, and

said reception information transfer means of said receiving terminal station superimposes the reception information about each wavelength measured by said reception characteristic measuring means, onto overhead information of the optical signals corresponding to said wavelengths which is transmitted by said second line, and transmits this to said transmitting terminal station end, and

said reception information transmission means of said transmitting terminal station superimposes and transfers said reception information about each wavelength, on a supervisory control signal superimposed onto the wavelength multiplexed signal light.

14. (Original) A wavelength division multiplexing optical communication system according to claim 11, wherein

said reception information transmission means of said receiving terminal station comprises a function for transmitting the reception information about each wavelength measured by said reception characteristics measuring means to said optical repeater station, instead of the reception information transfer means of said transmitting terminal station.

15. (Original) A wavelength division multiplexing optical communication system according to claim 11, wherein

when a plurality of optical repeater stations are arranged on said transmission path, the supply condition of Raman excitation light in said Raman amplifier by said Raman amplifier control means is controlled only for a specific optical repeater station selected from said plurality of optical repeater stations.

16. (Currently Amended) A wavelength division multiplexing optical communication method for transmitting a wavelength division multiplexed ~~optical~~ signal light containing a

plurality of optical signals with different wavelengths, from a transmitting terminal station to a receiving terminal station via an optical transmission path and an optical repeater station, wherein

in said receiving terminal station, reception information including an optical signal to noise ratio and a transmission error rate for the optical signals of respective wavelengths transmitted through said optical transmission path is measured, and the measured reception information about each wavelength is transmitted to said transmitting terminal station,

in said transmitting terminal station, the reception information about each wavelength transmitted from said receiving terminal station is transferred to said optical repeater station,

in said optical repeater station, depending on the reception information about each wavelength transmitted from said transmitting terminal station, a supply condition of Raman excitation light for Raman amplifying the wavelength division multiplexed signal light transmitted through said optical transmission path is controlled, and

in said transmitting terminal station, depending on the reception information about each wavelength transmitted from said receiving terminal station, a setting of pre-emphasis to be performed on the wavelength division multiplexed signal light transmitted through said optical transmission path is controlled.

17. (Currently Amended) A wavelength division multiplexing optical communication system for transmitting a wavelength division multiplexed ~~optical~~ signal light containing a plurality of optical signals with different wavelengths, from a transmitting terminal station to a receiving terminal station via an optical transmission path and an optical repeater station, wherein

said receiving terminal station comprises reception characteristics measurement means for measuring reception information including an optical signal to noise ratio and a transmission error rate for the optical signals of respective wavelengths transmitted through said optical transmission path, and reception information transmission means for transmitting the reception information about each wavelength measured by said reception characteristics measurement means to said transmitting terminal station,

said transmitting terminal station comprises pre-emphasis performing means for performing pre-emphasis on the wavelength division multiplexed signal light transmitted along said optical transmission path, chirp applying means for applying an optical wavelength chirp to the wavelength division multiplexed signal light transmitted along said optical transmission path,

control means for controlling said pre-emphasis performing means and said chirp applying means, depending on the reception information about each wavelength transmitted from said receiving terminal station, wherein a setting of the pre-emphasis in said pre-emphasis performing means is after controlling a setting of an α parameter representing an amount of the optical wavelength chirp in said chirp applying means, and reception information transfer means for transferring the reception information about each wavelength transmitted from said receiving terminal station to said optical repeater station,

said optical repeater station comprises optical amplification means containing a Raman amplifier for Raman amplifying the wavelength division multiplexed signal light transmitted from said optical transmission path, and Raman amplification control means for controlling a supply condition of Raman excitation light in said Raman amplifier corresponding to the reception information about each wavelength transmitted from said transmitting terminal station, and

said control means of said transmitting terminal station and said Raman amplification control means of said optical repeater station control the setting of the α parameter representing the amount of the optical wavelength chirp in said chirp applying means, and the setting of pre-emphasis in said pre-emphasis performing means, after controlling the supply condition of Raman excitation light in said Raman amplifier so that the performed pre-emphasis, the applied chirp and the Raman amplification are controlled together, in a repeating sequence, to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at said receiving terminal station.

18. (Currently Amended) A wavelength division multiplexing optical communication system, comprising:

a transmitting terminal station having a pre-emphasis performing unit performing pre-emphasis on a wavelength division multiplexed signal light, containing a plurality of optical signals of different wavelength, transmitted along an optical transmission path, a chirp applying unit applying an optical wavelength chirp to the wavelength division multiplexed signal light transmitted along said optical transmission path, and a controller controlling a pre-emphasis setting in the pre-emphasis performing unit, and controlling an α parameter setting representing an amount of the optical wavelength chirp in said chirp applying unit depending on reception information about each wavelength;

a receiving terminal station having a reception characteristics measurer measuring reception information including optical signal to noise ratio (OSNR) and a transmission error rate

of the optical signals of different wavelengths transmitted through said optical transmission path, and a reception information transmitter transmitting the reception information about each wavelength measured by said reception characteristics measurer to said transmitting terminal station,

wherein the pre-emphasis setting in said pre-emphasis performing unit is made after the α parameter setting, in a repeating sequence, so that the performed pre-emphasis and applied chirp are controlled together to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at the receiving terminal station.

19. (Previously Presented) The wavelength division multiplexing optical communication system according to claim 18, wherein

said optical transmission path has a first line for transmitting wavelength division multiplexed signal light from said transmitting terminal station to said receiving terminal station, and a second line opposite to said first line, and

said reception information transmitter superimposes the reception information about each wavelength measured by said reception characteristics measurer, onto overhead information of the optical signals corresponding to respective wavelength which is transmitted along said second line, and transmits the optical signals to said transmitting terminal station.

20. (Currently Amended) A wavelength division multiplexing optical communication method, comprising:

transmitting a wavelength division multiplexed signal light, containing a plurality of optical signals of different wavelengths, from a transmitting terminal station to a receiving terminal station via an optical transmission path;

measuring in said receiving terminal station, reception information including an optical signal to noise ratio and a transmission error rate of the optical signals of respective wavelengths transmitted through said optical transmission path, and transmitting the measured reception information about each wavelength to said transmitting terminal station, and

controlling in said transmitting terminal station, depending on the reception information about each wavelength transmitted from said receiving terminal station, a pre-emphasis setting to be performed on the wavelength division multiplexed signal light transmitted along said optical

transmission path and controlling an α parameter setting representing an amount of the optical wavelength chirp applied to the wavelength division multiplexed signal light transmitted along said optical transmission path,

wherein the pre-emphasis setting is made after the α parameter setting representing the amount of the optical wavelength chirp, in a repeating sequence, so that the performed pre-emphasis and the applied chirp are controlled together to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at the receiving terminal station.

21. (New) A method comprising:

transmitting a wavelength division multiplexed signal light from a transmitting terminal station to a receiving terminal station;

applying optical wavelength chirp the wavelength division multiplexed signal light by the transmitting terminal station; and

performing pre-emphasis on the wavelength division multiplexed signal light by the transmitting terminal station,

wherein the applied chirp and performed pre-emphasis are controlled together in accordance with an optical signal to noise ratio and transmission error rate of the wavelength division multiplexed signal light as measured at the receiving terminal station so that the pre-emphasis is performed after the chirp is applied in a repeating sequence to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at the receiving terminal station.

22. (New) An apparatus comprising:

means for transmitting a wavelength division multiplexed signal light from a transmitting terminal station to a receiving terminal station;

means for applying optical wavelength chirp the wavelength division multiplexed signal light by the transmitting terminal station;

means for performing pre-emphasis on the wavelength division multiplexed signal light by the transmitting terminal station; and

means for controlling the applied chirp and performed pre-emphasis together in accordance with an optical signal to noise ratio and transmission error rate of the wavelength division multiplexed signal light as measured at the receiving terminal station so that the pre-emphasis is performed after the chirp is applied in a repeating sequence to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at the receiving terminal station.

23. (New) A method comprising:

transmitting a wavelength division multiplexed signal light from a transmitting terminal station to a receiving terminal station;

performing Raman amplification of the wavelength division multiplexed signal light;

performing pre-emphasis on the wavelength division multiplexed signal light by the transmitting terminal station; and

applying chirp to the wavelength division multiplexed signal light by the transmitting terminal station,

wherein the performed Raman amplification, the performed pre-emphasis and the applied chirp are controlled together in accordance with an optical signal to noise ratio and transmission error rate of the wavelength division multiplexed signal light as measured at the receiving terminal station so that the applied chirp is controlled after the performed Raman amplification is controlled, and the performed pre-emphasis is controlled after the applied chirp is controlled, in a repeating sequence, to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at the receiving terminal station.

24. (New) An apparatus comprising:

means for transmitting a wavelength division multiplexed signal light from a transmitting terminal station to a receiving terminal station;

means for performing Raman amplification of the wavelength division multiplexed signal light;

means for performing pre-emphasis on the wavelength division multiplexed signal light by the transmitting terminal station;

means for applying chirp to the wavelength division multiplexed signal light by the transmitting terminal station; and

means for controlling the performed Raman amplification, the performed pre-emphasis and the applied chirp together in accordance with an optical signal to noise ratio and transmission error rate of the wavelength division multiplexed signal light as measured at the receiving terminal station so that the applied chirp is controlled after the performed Raman amplification is controlled, and the performed pre-emphasis is controlled after the applied chirp is controlled, in a repeating sequence, to optimize signal to noise ratio or transmission error rate of the wavelength division multiplexed signal light at the receiving terminal station.